OSD Tri-Service Assessment Initiative
Assessment Architecture

Assessment Process Model Description
Version 2.2

December 6, 1999

Overview

The purpose of this paper is to provide a description of the process that will be used to assess software intensive DoD programs under the OSD Tri-service Assessment Initiative. This paper describes the activities and associated tasks which comprise the process, and defines a consistent implementation approach for the initiative.

The Assessment Process Model defines the activities and tasks required to effectively implement and improve software and system assessments across the diverse base of DoD programs. It defines both the infrastructure and application tasks implemented by initiative management, the program assessment teams, the architecture development team, and DoD program and enterprise managers.

Objectives

The Assessment Architecture defines the assessment process and a consistent issue structure applicable to all program assessments. There are two key components of the Assessment Architecture, the Assessment Process Model and the Assessment Information Model. Together, these two components provide the overall model for planning and implementing software program assessments. The objectives of the Assessment Architecture, and its two primary components, are as follows:

- Provide objective, value added results directly to DoD programs to support specific program software and system improvement actions.

- Define a consistent and effective information driven assessment process to be employed by all assessment participants across all programs.

- Integrate the assessment process with a flexible set of information requirements driven by program issues.

- Provide a top-level assessment approach that can utilize existing assessment tools and techniques.

- Address a wide scope of software, system, and program related issues.

- Directly support the program assessment teams in planning and implementing the assessment tasks for a particular program.

- Provide aggregated feedback and lessons learned at the DoD enterprise level to support investment and policy decisions.

- Provide a structured basis for follow-on evaluation of assessment recommendations adopted at both the program and enterprise levels.

Assessment Architecture Overview

The Assessment Architecture is comprised of two primary components, the Assessment Process Model and the Assessment Information Model. These components work together to ensure that the program assessment teams conduct all program assessments using a consistent approach, and to ensure that all potential program issues are addressed.

The Assessment Process Model is comprised of seven key activities, which are described in detail in this document. The activities include:

- Establish and Improve Assessment Capability
- Initiate and Plan Assessment
- Perform Assessment
- Integrate and Report Assessment Results
- Evaluate Assessment Process and Results - Conduct Enterprise Analysis
- Program Technical and Management Actions
- Enterprise Technical and Management Actions

The Assessment Information Model is comprised of three primary components, and is described in detail in a separate document. The components are:

- Program Issue Structure - a typology of program issues to be addressed by the program assessment team during an assessment.

- Library of Assessment Tools and Techniques - a collection of assessment tools, techniques, and references that support the detailed analysis of one or more program issues.

- Issue Analysis Guidelines - guidance for prioritizing, analyzing, and relating identified program issues.

  (Note: The Library of Assessment Tools and Techniques and the Issue Analysis Guidelines are currently under development.)

Assessment Architecture Application

The use of the Assessment Architecture coincides with the overall objectives of the OSD Tri-service Assessment Initiative. As such, the Assessment Architecture focuses on issue identification and associated performance improvement at the program level, and the systemic analysis of recurring issues across the DoD program base.

The Assessment Architecture is applicable across all phases of the program life cycle, where it can be implemented to support the following:

- The assessment of program office acquisition plans and processes.

- The assessment of program office and supplier technical and management processes and associated product quality and performance.

The Assessment Architecture, as defined and applied by the OSD assessment initiative, is not intended to directly support source selection requirements or the comparison of program or supplier performance. The architecture, however, may be adapted to support these assessment objectives.

Roles and Responsibilities

The following roles and responsibilities are pertinent to the Assessment Process:

- <u>Acquisition Program / Project Manager</u> - The assigned acquisition manager for a specific program or project. Responsible for all aspects of program acquisition and related decisions. The primary user of the program assessment results. Determines distribution of program assessment results.

- <u>Acquisition Enterprise Manager</u> - Acquisition Manager responsible for two or more programs. A customer for enterprise level analysis results and products. An Acquisition Enterprise Manager may be in either a policy/staff position (OSD, Service Executives) or in the service/agency program organizational structure (PEO). (Note: Organizations define the term Enterprise Manager differently. The Assessment Architecture sees the Enterprise Manager as being responsible for multiple independent programs which independently compete for available acquisition resources.)

- <u>Software Supplier</u> - Organization responsible for the development and/or maintenance of a software product or system. Includes all prime and subcontractors if there is more than one software developer/maintainer. A user of the program assessment results.

- Assessment Initiative Manager - Responsible for managing the day-to-day activities of the assessment initiative, including individual assessment management and oversight, project financial management, and interfacing with sponsors and the Management Board. Also responsible for defining detailed process implementation guidance and tailoring such guidance to specific program assessments. Maintains the database of prospective team participants.

- Assessment Management Board - A group of senior service and industry personnel, which oversees the OSD Assessment Initiative. The Assessment Management Board is permanently established with representatives from a wide scope of DoD and Industry sources. It is responsible for overall initiative policy and for ensuring that assessment results and recommendations are reviewed for quality and consistency at both the program and enterprise levels. The Assessment Management Board Chair is responsible for oversight of the OSD Tri-service Assessment Initiative.

- Program Assessment Team - This team is comprised of a Team Lead and selected participants from DoD, Industry, and the program development team (program office and software supplier personnel). Team makeup is based on the projected assessment requirements and associated issue profile for each individual program. The Program Assessment Team is responsible for implementing the assessment process (with a focus on the core activities) for a specific program.

- Assessment Team Lead - Responsible for the planning and conduct of a specific program assessment in accordance with the Assessment Architecture and related guidance. Interfaces directly with the Assessment Initiative Manager and program personnel. Manages the program assessment team.

- Assessment Team Members - Participants on specific program assessments. Responsible for assessing assigned issue areas and generating related assessment documents, analysis, and reports. The Program Assessment Teams are assembled from selected software and domain professionals as required for each program assessment.

- Independent Peer Reviewer - The person or persons designated to independently review the assessment findings, results, conclusions, and recommendations for a given program assessment. The Peer Reviewer evaluates the program assessment results for compliance with the assessment process and to verify that assessment conclusions and recommendations are consistent with the findings. The Peer Reviewer is assigned during the assessment planning process when the assessment

team is selected. The Peer Reviewer is not a member of the assessment team.

- Assessment Architecture Development Team - Responsible for the development and improvement of the Assessment Architecture, including all related products and resources. Also responsible for ensuring that all assessment participants are trained in the defined assessment guidance. Responsible for enterprise and performance data collection, analysis, and reporting, and assessment process performance analysis.

Assessment Process Model

Figure 1 depicts the overall Assessment Process Model. The characteristics of the model are described below.
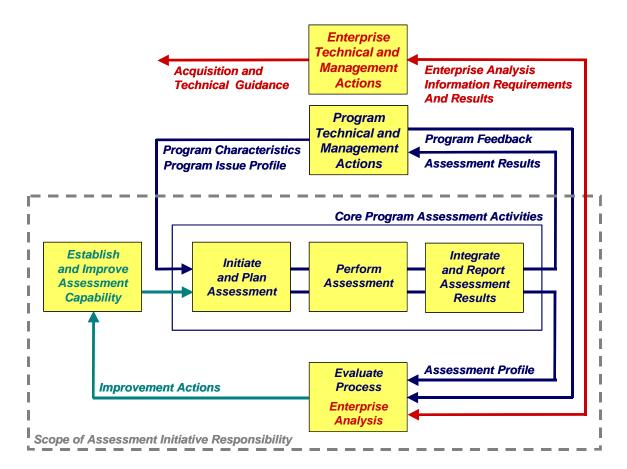

Figure 1 - Assessment Process Model

There are seven key activities which comprise the assessment process:

- Establish and Improve Assessment Capability

- Initiate and Plan Assessment
- Perform Assessment
- Integrate and Report Assessment Results
- Evaluate Assessment Process and Results - Conduct Enterprise Analysis
- Program Technical and Management Actions
- Enterprise Technical and Management Actions

The seven activities are all necessary to the assessment process. All activities except Program Technical and Management Actions and Enterprise Technical and Management Actions are the responsibility of the OUSD Tri-service Assessment Initiative.

Three of the assessment process activities are designated as "core" assessment activities.   The "core" activities are:

- Initiate and Plan Assessment
- Perform Assessment
- Integrate and Report Assessment Results

These activities encompass the assessment tasks and interactions necessary for specific program assessments. These activities are the primary responsibility of the designated program assessment teams. The tasks that comprise these "core" activities provide for increasing insight into program issues. As defined, the activities support an initial identification of program problems and risks under the Initiate and Plan Assessment activity. During the Perform Assessment activity, the assessment team identifies, prioritizes, and assesses new issues, and expands their understanding of all issues using various assessment tools and techniques. Under Integrate and Report Assessment Results, the team relates the program issues in terms of cause and effect, and overall impact on the program.

Each activity in the assessment Process Model is comprised of a number of tasks. The tasks delineate the specific actions required to implement the activity. In general, the tasks are defined in terms of implementation requirements, product output, and assigned responsibility. Some tasks are implemented on a continuous basis while others are implemented only once.

All Assessment Process Model activities and associated tasks must be implemented. Tasks may not be tailored out of the process. Individual tasks and associated implementation guidance may be tailored to best address the technical and management characteristics of the program being assessed, the time frame for an individual program assessment, and the overall scope of the assessment. The program assessment team must document the manner in which the tasks are tailored in the program assessment plan.

(Note: The Assessment Information Model, which works in conjunction with the Assessment Process, provides a top-level typology for identifying and relating program issues. All of the issues in the Issue Structure must be at least be reviewed by the program assessment team as part of the issue identification process. Those issues which are deemed to be high priority will be subject to more detailed analysis. Issues may be tailored into the structure, but not deleted. All of the issues listed in the Assessment Information Model are not subject to in-depth analysis. However, the program assessment team must consider them all. The Assessment Information Model does serve as a complete structure to communicate overall program issue possibilities to the program manager and supplier.)

All assessments are conducted on individual programs in conjunction with program office requirements. There are different types of assessments, generally defined in terms of the purpose and scope of the information needs of the program manager. They include:

- Assessments of general program "health"
- Assessments focused on specific program issues
- Assessments focused on specific program organizations
- Software and/or system assessments

No individual program assessment results are provided by the OSD Tri-service assessment team to enterprise level managers without the concurrence of the program manager. The program manager controls the release and dissemination of all program specific assessment results. The Tri-service Assessment Architecture Development Team is responsible, however, for analyzing and reporting systemic issues across the base of assessed programs to support enterprise level management and decision making.

Each activity that comprises the Assessment Process Model is individually described in the following sections (Figure 1 refers). The activities are described in terms of:

- The purpose of the activity.
- The tasks which comprise the activity.
- General responsibilities associated with implementing the activity.
- Key output products.
- Associated implementation guidance.

Establish and Improve Assessment Capability

Purpose

The Establish and Improve Assessment Capability activity ensures that the technical and management infrastructure, and qualified technical resources,

are available to effectively conduct program assessments. Implementation of the tasks associated with this activity results in a program assessment organization capable of assessing diverse DoD programs and improving the manner in which the assessments are conducted.

Tasks

The following tasks comprise the Establish and Improve Assessment Capability activity:

- Define and improve the assessment architecture and associated products.

- Develop and implement an initiative performance measurement process and an associated database.

- Establish assessment team member qualifications and associated team selection criteria. Develop and update the participant's qualifications, training, and experience database.

- Develop a library of assessment tools, techniques, and references for use by the program assessment teams. Map these components to the assessment issue structure.

- Establish and maintain an assessment education and training program.

- Manage and improve the program assessment process and associated financial, personnel, and technical resources. Communicate with all assessment stakeholders.

Responsibility

Initiative management has the responsibility for the Establish and Improve Assessment Capability tasks. The Initiative Manager is responsible for general management tasks, including resource and personnel management, education, and stakeholder communications. The Assessment Architecture Development team is responsible for initiative performance measurement, the assessment tools and techniques library, and definition and improvement of the Assessment Architecture. Program Assessment team participants are responsible for remaining current with the Assessment Architecture guidance and associated implementation guidance.

Products

Key Establish and Improve Assessment Capability output products include:

- Assessment Architecture documentation

- Assessment tool, technique, and reference library and associated components
- Initiative performance measurement database
- Assessment education and training courses and materials
- Assessment team member capability database

Associated Implementation Guidance

The following is a partial list of the implementation guidance required to support the Establish and Improve Assessment Capability activity:

- Initiative information briefings
- Assessment activity summary report
- Quarterly sponsor reports

Initiate and Plan Assessment

Purpose

The Initiate and Plan Assessment activity is the first of the three "core" assessment activities. This activity includes those management and technical tasks required to initiate and implement the assessment process for a specific program. Implementation of these tasks results in the selection of a program assessment team, a consensus plan/approach for conducting a program assessment, and an initial profile of program characteristics and issues.

Tasks

The following tasks comprise the Initiate and Plan Assessment activity:

- Establish the need for, and agree to conduct, a program assessment. This task includes interfacing with the program manager / assessment customer, determination of the scope of the assessment to be conducted, and other related efforts.

- Obtain, disseminate, and review initial program information. This includes a program characteristics profile, associated program documentation, and a program perspective of identified issues.

- Identify and assign the assessment team lead and team participants based upon the project program issues.

- Develop an initial program issue profile using the Assessment Information Model issue structure.

- Plan the program assessment and document the approach in the Program Assessment Plan. Planning information shall include:

- Assessment objectives and strategy
- Assigned assessment resources
- Assessment tailoring approach
- Assessment schedule
- Prospective issues and associated information needs / sources
- Initial issue prioritization
- Projected assessment techniques
- Assessment work products
- Assessment exit / success criteria
- Dissemination / non-disclosure agreement(s)

Responsibility

Both Initiative management and the program assessment team have the responsibility for the Initiate and Plan Assessment tasks. The Initiative Manager is responsible for the initial interface and the data gathering with the program assessment customer. The initiative manager constructs the initial program and issue profiles and supports the selection of prospective assessment team participants. Once the team leader is identified, the team leader and the assessment initiative manger work together to define and finalize the assessment plan. As additional team participants are identified, they also participate in the planning process. The assessment team leader is responsible for developing the overall assessment strategy, following the guidance in the Assessment Architecture, and managing team logistics and schedules.

Products

Key Initiate and Plan Assessment output products include:

- Program characteristics and issue profile
- Program assessment plan

Associated Implementation Guidance

The following is a partial list of the implementation guidance required to support the Initiate and Plan Assessment activity:

- Non-disclosure agreement(s)
- Program manager correspondence and agreements
- Program information request

Perform Assessment

Purpose

The Perform Assessment activity is the second of the three "core" assessment activities. This activity includes those management and technical

tasks required to identify and prioritize program issues, provide in-depth investigation into critical program issues, and to establish an information and findings baseline which supports integrated issue analysis and the generation of appropriate improvement recommendations. Implementation of the Perform Assessment tasks results in expanded insight into the program issues, and program assessment information base.

Tasks

The following tasks comprise the Perform Assessment activity:

- Identify and prioritize program issues in accordance with the Assessment Information Model. Expand insight into known issues. Potential issue identification and prioritization tools and techniques include the following:
  - Program office - supplier Issue workshop(s)
  - Program interviews
  - Document review
  - Program meeting participation (PMR, etc.)
  - Review of risk analysis results
  - Review of measurement results

- Conduct in-depth analysis of key program issues. Select and apply appropriate assessment tools and techniques. Document findings and results. Issues shall be described and evaluated in terms of associated program objectives, assumptions, and constraints. Specific issue findings shall address problems, risks, and lack of information. Program strengths related to identified issues shall also be addressed.

- Assessment implementation information shall be documented in the assessment team work papers. This information includes:
  - Key deviations from the original assessment plan, strategy, and scope
  - Assessment process and issue tailoring decisions
  - Assessment support / source documentation

- A current program issue profile shall be expanded and maintained in accordance with the Assessment Information Model.

- The Initiative manager and the assessment team lead will maintain a continuous interface with program / customer personnel.

Responsibility

The program assessment team has the primary responsibility for the Perform Assessment tasks. The Initiative Manager is responsible for overseeing the program assessment and for interfacing with the assessment customer with

respect to assessment management. The assessment team lead is required to coordinate with the initiative manager to support assessment implementation and management.

Products

Key Perform Assessment output products include:

- Assessment work papers
- Revised program issue profile(s)

Associated Implementation Guidance

The following is a partial list of the implementation guidance required to support the Perform Assessment activity:

- Program correspondence

Integrate and Report Assessment Results

Purpose

The Integrate and Report Assessment Results activity is the third of the three "core" assessment activities. This activity includes those management and technical tasks required to relate the issues that have been individually evaluated, analyze and integrate the results in terms of cause and effect, and report the results with appropriate recommendations for the program.   As a result of this activity, the assessment customer understands key program issues and receives an actionable improvement plan. In addition, program assessment results are made available for systemic enterprise level analysis of recurring issues.

Tasks

The following tasks comprise the Integrate and Report Assessment Results activity:

- The final program assessment issue profile is defined and documented. Issues are prioritized with respect to program impact. Issues that are distinct as a result of different perspectives (Note: usually program office and supplier perspectives) shall be identified and explained.

- Identified issues and related findings are analyzed together using integrated analysis guidelines in the Assessment Information Model. The focus of this analysis is to relate the identified program issues in terms of cause and effect.

- Improvement recommendations related to the program issues and associated action plans are generated and documented.

- The preliminary program assessment report is generated in accordance with the assessment report outline. The preliminary report may be in the form of an annotated briefing, written report, or both as dictated by program requirements. It must reflect the consensus of the assessment team. The report is reviewed by the peer reviewer.

- The preliminary report is reviewed with the assessment customer (program manager). The customer is given the opportunity to comment and/or add additional information.

- The final report is drafted. The final report consists of both the annotated brief and the written report. The report is then disseminated per assessment customer guidance.

- Feedback is provided by the assessment team to the initiative, which includes required performance measures, Assessment Architecture related lessons learned, and issues related lessons learned.

- The program assessment customer is solicited for assessment evaluation information and periodic performance feedback.

Responsibility

The program assessment team has the primary responsibility for all Integrate and Report Assessment Results tasks. The Initiative Manager is responsible for overseeing the program assessment and for interfacing with the assessment customer with respect to assessment management and assessment implementation feedback. The assessment team lead is required to coordinate with the initiative manager to support assessment implementation and management. The assessment team lead also provides feedback information to the Architecture Development Team for analysis. The peer reviewer is responsible for reviewing the draft assessment report and for providing related technical comments.

Products

Key Integrate and Report Assessment Results output products include:

- Assessment work papers
- Software Assessment Report Briefing
- Software Assessment Written Report
- Assessment feedback information / reports / evaluations
- Final Program Issue Profile

Associated Implementation Guidance

The following is a partial list of the implementation guidance required to support the <u>Integrate and Report Assessment Results</u> activity:

- Program correspondence

Evaluate Assessment Process and Results

Purpose

The <u>Evaluate Assessment Process and Results</u> includes those management and technical tasks required to collect and analyze assessment results and related issues across a wide range of programs, as well as those tasks required to internally evaluate the assessment process. At the program level, this activity focuses on the extent and impact of the adoption of the assessment recommendations by the individually assessed programs. At the enterprise level, this activity helps to evaluate overall program adoption and associated impacts resulting from all assessment efforts. At the initiative level, this activity helps to evaluate and improve the overall assessment process and Assessment Architecture.

Tasks

The following tasks comprise the <u>Evaluate Assessment Process and Results</u> activity:

- Perform periodic program recommendation adoption and impact feedback analysis.

- Perform multi-program issue profiling and analysis. Generate analysis reports for use by both Program and Enterprise level customers.

- Maintain the issues / lessons-learned database / repository

- Perform initiative performance analysis against defined performance criteria. Recommend specific improvement actions.

Responsibility

The Assessment Architecture development team has the primary responsibility for all <u>Evaluate Assessment Process and Results</u> tasks. The Initiative Manager is responsible for interfacing with the assessment customer with respect to required periodic feedback.

Products

Key <u>Evaluate Assessment Process and Results</u> output products include:

- Program impact summary report(s)
- Program / Enterprise systemic issue analysis reports
- Assessment performance measurement reports
- Issues / lessons learned database / repository

Associated Implementation Guidance

The following is a partial list of the implementation guidance required to support the Evaluate Assessment Process and Results activity:

- Program assessment feedback information
- Program correspondence

Program Technical and Management Actions

Purpose

The Program Technical and Management Actions activity includes those management and technical tasks implemented by program decision makers to provide assessment information and to make improvements based on assessment results and related recommendations. The Program Manager and the program development team, inclusive of the supplier contractor(s) and subcontractor(s), represent the program level decision makers. As a result of implementing the Program Technical and Management Actions tasks, the program assessment team is able to implement issue identification and analysis actions, and the program assessment customer(s) can implement improvement actions.

Tasks

The following tasks comprise the Program Technical and Management Actions activity:

- Provide the assessment team with required program characteristic and issue information.

- Provide the assessment team with access to appropriate program personnel both the program office and associated supplier(s).

- Provide a program office representative to participate on the assessment team.

- Maintain an interface with the program assessment team.
- Review and comment on preliminary assessment results.

- Review, consider, and implement assessment recommendations.

- Provide feedback on assessment performance and on the impact of adopted assessment recommendations.

Responsibility

The program level assessment customer (usually the program manager) has the primary responsibility for all Program Technical and Management Actions tasks. The Initiative Manager is responsible for interfacing with the assessment customer with respect to required periodic feedback.

Products

Key Program Technical and Management Actions output products include:

- Preliminary assessment report comments
- Assessment and program performance feedback

Associated Implementation Guidance

The following is a partial list of the implementation guidance required to support the Program Technical and Management Actions activity:

- Program correspondence

Enterprise Technical and Management Actions

Purpose

The Enterprise Technical and Management Actions activity includes those management and technical tasks implemented by executive level decision makers to make changes to global acquisition technical guidance and policy. The DoD Enterprise level is represented by managers with cognizance over multiple programs. Enterprise managers include PEO's, DoD Acquisition Executives, DoD Policy Managers, and other DoD Executive managers. As a result of implementing associated tasks, acquisition and technical guidance and policy are improved based on the analysis of empirical data and validated best practices.

Tasks

The following tasks comprise the Enterprise Technical and Management Actions activity:

- Identify enterprise level questions and information requirements.

- Review, consider, and implement enterprise level policy and guidance recommendations.

Responsibility

The enterprise level manager (assessment customer) has the primary responsibility for all Enterprise Technical and Management Actions tasks. The Initiative Manager is responsible for interfacing with the enterprise level customers with respect to required periodic feedback.

Products

Key Enterprise Technical and Management Actions output products include:

- Revised acquisition and technical policy and guidance documents.

Associated Implementation Guidance

The following is a partial list of the implementation guidance required to support the Program Technical and Management Actions activity:

- Enterprise correspondence